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RULES
FOR
RECOVERING
PERSONS
RECENTLY DROWNED:
IN A
LETTER

TO THE
Rev. GEORGE ROGERS, A.M.

RECTOR of SPRAUGHTON, in SUFFOLK.

L O N D O N :

PRINTED BY G. WOODFALL,
FOR T. N. LONGMAN, PATERNOSTER-ROW; AND
J. JOHNSON, ST. PAUL'S CHURCH-YARD.

1794.



RULES FOR RECOVERING

PERSONS

RECENTLY DROWNED:

IN A

LETTER to the Rev. GEORGE ROGERS, A.M.

DEAR SIR,

IN consequence of the melancholy accident that happened near your house, a few days ago, and which was the subject of some remarks I made when I last had the pleasure of seeing you, I send you a few cautions, and rules, which ought to be put in practice on similar occasions, and with all the speed possible.

Four lives have now been lost by drowning, in this neighbourhood, in the space of the last five months; (i. e.) three by the over-setting of the ferry-boat at Harwich, and the one which occasions you the present communication. They

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were

were all young, and in the bloom of health, and useful in their various stations to the community.

It is lamentable to add, that none of them could be saved; yet it has been affirmed, none of them were long in a state of submersion; the longest, they say, not exceeding a quarter of an hour, and some of them much shorter.

This want of success has been considerably greater than what has fallen to the lot of practitioners in other parts of England, since the time that the exertions of the Humane Society first began to extend themselves. Doubtless, those who were present used their best endeavours; nor is it meant by this, in the most distant degree, to throw reflections on them.

I beg you will disperse these few observations as far as your influence reaches, that the common people at least, may, in some measure, be prepared to use their endeavours in a manner likely to be successful, should they hereafter be called on, from like events, to put them into practice; and to this, your known humanity, I am persuaded, will induce you.

All I think necessary to say here, shall be couched under a very few heads; and on each I shall be as short as the nature of the thing will permit, to be explicit, that the cautions conveyed,
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and the rules laid down, may be the more readily remembered.

I need not inform you, that people residing in sea-port towns, and those situated near rivers, are more liable to accidents from drowning than others. The laudable endeavours of the Humane Society have snatched hundreds from the grave; and, by their encouragement and proffered rewards, have been the happy means of provoking to philosophical investigation several ingenious men: the labours of such have enriched the medical world; and their experiments and discoveries greatly elucidated the subject of resuscitation.

Medical men are now, I hope, in general, pretty well prepared for applying the doctrines laid down by them, when accidents of the above nature fall in their way. I shall suppose, that, for the most part, they are provided with the best apparatus necessary on such occasions, and also sufficiently expert in their application. The public ought not, however, to expect success on every occasion, even when the best means are used.—Cases will occur where life cannot be recalled, and where want of success does by no means prove want of skill.—This has, and doubtless may again take place, even when the submersed body has been but a very short time in the water. It is not necessary to enter into an explanation of this now, though it

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could

could receive a satisfactory elucidation, was this the place for it. For the sake of those of the profession who may not have the books at hand where the subject is treated of at large, as well as for those whose walks in life have never permitted them to turn their thoughts this way, I shall recapitulate some of the chief parts of the practice to be pursued, and followed up with ardour: they will serve, as we have already said, as a memorandum for the medical man, while they will give the common reader, unskilled in physic, some better idea of what should be attempted by themselves, should no medical man be near, or at least till he arrives.

First, then,—As soon as the body is discovered and brought out of the water, it is to be conveyed to the nearest house; and this is to be done by the gentlest means possible. This caution I consider of high importance. Much tossing or shaking will destroy all hope of recovery; and many a person has been sacrificed, by not attending to it, where life would otherwise have been restored.

The body is by no means then to be rolled, as many, ignorant of the pathology, and the immediate cause of suspended breathing, have injudiciously practised. They have acted so, under the notion that the body must be full of water, swallowed in the instant of drawing. This is
erroneous;

erroneous; for little or none is taken in during submerſion. The chief cauſe of ſuſpended breathing is the perſon's being totally and inſtantly cut off from a communication with the atmofpheric air. The parts then are juſt in the ſame condition they were the moment he ſunk in the water. All circulation of the blood is almoſt in a twinkling ſtopped, becauſe no atmofpheric air can afterwards be admitted.

Diſſections of drowned bodies have proved, that the cavities of the heart are loaded with blood. Should the body be rolled, or toſſed about, this principal part of the human fabric muſt be ruptured, and all be at an end; all hopes of recovery then vaniſh.

Secondly,—On taking up the body, we are not to wait for an increaſe of heat before we begin our operations. We are to commence them by expanding the lungs *immediately*. This is not only the firſt, but the moſt important part of the proceſs. The lungs are not to be ſuffered to remain a moment in a collapsed ſtate. If there be a ſurgeon preſent, and he has the double-ſtopped bellows, and tubes, it is unneceſſary to ſay how this is to be attempted: if not, common bellows muſt ſupply their place, and thoſe means uſed that are then at hand. The action of reſpiration is conſtantly to be imitated: but, let it be remem-

bered, not to throw in the air in a forcible manner; instead thereof, it must be gently and gradually supplied: first a little; then gently pressing the chest to force part of it out; and thus continuing about a minute, when the whole air is to be pressed out with a greater force, and a large inflation made: for in ordinary respiration the lungs are passive.

One reason, and that not the least, is, that the air is the source of animal heat, and without it life cannot be continued; it is the principle that irritates muscles, and causes their motion to be renewed; it is Nature's stimulus, wisely appointed by the Creator of our bodies.

In a few practical remarks it would be foreign to enquire more minutely into this subject; the advocates for the pneumatic physiology, will, doubtless, refer it to the blood's being supplied by this process with oxygene, of which it was deprived by suspended respiration; and which, perhaps not without reason, they think is the source of irritability; and they will, we may conclude, bring some part of their proof from the difference of colour in the blood of the right and of the left sides of the heart; namely, that in the former it is found of a black, and in the latter of a florid red colour, from its admixture with the air in its passage through the lungs. Here the blood, they
will

will affirm, imbibes this principle, and becomes now endowed with a power of irritating the heart to contractions, which till this it did not possess. Thus the heart propells its contents, and is immediately ready to receive a new supply from the succeeding inspiration. And they would further say, that as this principle is necessary to keep alive every fibre of the body, so it is thus by the circulation distributed to the most distant and most minute parts.

Thirdly. All authors on the subject have recommended heat; this is, without doubt, a matter of importance; but its regulation requires great care.

Error is no where oftener committed than in this part of the practice. If the heat be too great it will destroy the remains of life, instead of contributing to resuscitation. It will produce not a healthy, but a diseased change in the arrangement of parts; and, in all probability, act in the same manner here, as if applied suddenly and largely to a frost-bitten limb.

A few degrees above the common atmosphere is the most proper standard; six or eight may be sufficient, provided this is between 60 or 70 of Fahrenheit. I should think it best to keep it below the standard of animal heats; this I place at 98 in the human body.

A room heated by a common fire, then, being always some degrees above the atmosphere without doors, may afford a very convenient warmth; and a kitchen, from its having a constant fire kept in it, is best adapted, provided it be free from the effluvia of meat, and from smoak. Both of these must, in some degree, influence the purity of the air in it, and thereby obstruct our processes.

Suppose our patient now (or the body, if you please) to be removed into the kitchen of the nearest cottage, the wet cloaths all taken off, and the body itself well dried with a towel; let a matras next be laid on a table of a proper height and length; on this the body is to be placed in such a way as to allow the assistants most conveniently to stand round it, in order to commence their operations: care must always be taken to lay the head considerably higher than the extremities. The body should not be laid on its back, but on its right side, that the circulation may be favoured by the descent, when the heart is set in motion.

With respect to heat, considered in itself, it has no other use than merely as a corroborating stimulus, the application of which requires much nice regulation. It cannot supply the principle of life; this must be sought for from the common atmosphere. Nay, in proportion as the air becomes

comes contaminated by exhalations from fuel, and other impurities, in the same proportion this salutary food of life is exhausted.

This leads me to notice the necessity not only of excluding all supernumerary persons, I mean those not needed in the process going forward, and remaining merely from idle curiosity, or useless sympathy, but argues strongly for the free admission of atmospheric air.

Fourthly. Frictions have at all times been recommended, and much stress has been laid on them; but abuse in this part may also be committed; for instance, should they be had recourse to before the lungs have been expanded, they must do hurt: after, however, the lungs have been several times expanded, and allowed to collapse, as already directed, in imitation of the natural respiration, their use becomes necessary. Along with these, it has been common to recommend spirits externally applied, as an assistant to the friction; but this is not necessary. Nothing need be added, unless a little common oil on the fingers, or palms of the hands. The region of the heart is the part where frictions should be more especially made on.

The reason why the lungs should be expanded before friction be had recourse to, is, that its ac-
tion

tion being only simply mechanical, it may assist in propelling the blood through the circulation.

Among the various things recommended, tobacco smoak has held a chief place ; but why it has done so is to me strange, when the deleterious qualities of this plant are considered, and when its known effects of producing sickness and debility render it a substance so unfit to restore life and vigor. I would reprobate its use altogether. Heat it supplies very scantily ; for this will be in proportion to the density of the medium through which it is conveyed. Smoak is a thin medium and can convey little. But granted that it has no deleterious effects, it has already been laid down as a rule, that a small quantity of heat only is enough, and its smoak is not needed for this end. And who, with the least propriety could advise a strongly debilitating power, when we wish to rouse the system from a high degree of torpor ?

Sixthly. Emetics. These are likewise improper before the circulation is restored, nor ought they at all to be exhibited, unless when it was previously known that the stomach was loaded when the accident took place : nay, I have my doubts how far even then they may be useful ; and this on the same grounds, that tobacco smoak was reprobated. An emetic cannot act till circulation
has

has in some degree been restored. It almost never acts unless by producing some degree of sickness and debility. The last is what we wish to obviate.

Seventh. Venæ-Section. This has been used, and, I believe, in most cases is among the first things attempted to be done; but I think it would be better omitted, for the grounds on which it has been prosecuted appear to me not well founded. The foundation on which it has been instituted and recommended, is by supposing that apoplexy took place from submersion. This is not the case, as can satisfactorily, we apprehend, be proved, did this short essay permit the investigation. No injury is done to the brain in this complaint, because no blood can enter after the person sinks in the water, neither can any be returned from the head. Things then must remain just in the state they were at the instant of going down, circulation being entirely and completely stopped. Instead of being useful, I am not without fears that it would prove detrimental, because it is a debilitating power, the very thing to be avoided; at any rate it is an equivocal remedy, and may be omitted without prejudice.

The heart is the part that is now too much distended with blood; but we cannot take it immediately from thence. Could this, indeed, be
done,

done, no shadow of doubt could remain of its utility; for experiments made on this subject, and to determine this very point, have clearly shown it.

But the taking blood from other and distant parts, has not been attended with success in setting the heart in motion, and has, as already said, a debilitating effect.

Had the accident happened from hanging, instead of submersion, bleeding then would have been expedient, since it is found, that blood *does* pass into the brain after suspension, and a plethora thereby produced in the brain, which, as has been already said, cannot happen after the body is immersed. The cord does not so completely compress the wind-pipe, but that a small quantity of atmospheric air enters, by which means a partial circulation is carried on through the carotids; but as the jugular veins, by which, as the anatomist knows, the blood is returned from the head, lie more superficial, and in the way of the cord, the compression prevents these vessels from emptying themselves into the heart; hence comes the plethora, and the indication of bleeding, which may be conveniently done from the very vessels where it can be most effectual, the jugulars themselves. Or, if the operator fails in them, from other vessels of the head; the temporal arteries, &c.

In

In recovering a person from the effects of noxious vapours, the same may be said as of drowning; no plethora takes place, therefore venæ-section is unnecessary, if not improper.

Eighthly. Electricity. If this be judiciously applied in small and gentle shocks, it may be productive of good effects; but we should keep in mind, that it is one of those remedies, which from its great stimulant power, may do much good, or much harm. The person who applies this means, should well weigh the business in which he is engaged, if he wishes to apply it with probable hopes of success.

Let it be done in the following manner: let one of the assistants expand the lungs, and let the medical man that instant have himself prepared to communicate the shock: for it is at the moment the lungs are expanded that a free passage to the blood is opened; and, therefore, at no other moment could the electricity assist in propelling it forwards from the heart; nay, at any other moment it will do hurt. Should it be given in the collapsed state of the lungs, it is a thousand to one but the irritability of the heart is destroyed, or a rupture produced by the forcible contraction that would take place in the heart. In this case it is easy to see that it must react on itself,

self, like a solid body, in proportion to the action given.

Ninthly. With one caution more I shall finish these few observations, and I consider this caution as none of the least in magnitude: it is this, to advise the assistants not to discontinue their endeavours to restore the patient too hastily. Many lives, we fear, have been lost through want of attention to this rule; perhaps for the first hour, nay, for two, or three, there may be no appearances of returning life; this, it is confessed, is disheartening, but they must not yield; four, or even more hours, are the least they should apply; for it is impossible to say, *a priore*, how long the body may continue in a state of suspended respiration, before all irritability be destroyed; this will be longer or shorter in different persons.

When the heart has begun to play, should its action be weak, and the powers of life seem unequal to their functions, let the same means be continued a little longer, lest by desisting too soon, respiration may be again interrupted.

A complete treatise on this subject was not proposed here, yet I believe little of the practical part necessary to be done is omitted; for I am led to think few cases will succeed by bronchotomy, which is here unnoticed, that will not
succeed

succeed without it; when all things fail, authors have proposed it; but much may be said against the operation, and I think little in its favour.

Whoever wishes to see the subject of submersion prosecuted in a more complete and extensive manner, must have recourse to the books expressly written for the purpose. In the voluminous reports of the Humane Society will be found much useful and curious matter. Goodwyn, Coleman, and Kite, have each of them given us useful treatises on this branch of medical philosophy.

RECAPITULATION.

1. The body to be undressed after being taken to the nearest house, and wiped dry; then placed on a table, covered with a matrafs, and let it be laid on the right side, in preference to the left, that the passage of the blood from the heart may be favoured by this position.

2. Expand the lungs as soon as possible; much depends on this; for this purpose let a pair of bellows be preferred to the blowing in air with
a per-

a person's mouth ; the air thus thrown in is vi-
tiated by passing from the lungs of the person
employed in the operation.

3. Do not be anxious to place the body in a
high degree of heat, though this has been advised
and practised, it is wrong, a small degree is suf-
ficient.

4. Let no more persons be present than are
absolutely necessary in the operation ; let all the
doors and windows be open in the apartment,
that the atmosphere may be freely admitted.

5. Apply friction *only* after the lungs have been
expanded, and allowed to collapse again for ~~some~~
time, as already directed ; neither spirits, nor any
other thing need be applied with friction, unless
a little oil on the fingers.

6. No injections seem to be necessary ; avoid
those of *tobacco* smoke at least, as *certainly* hurtful.

7. Emetics may also be dispensed with, unless
where we knew before-hand that the stomach was
loaded with food, or other matter.

8. Blood-letting seems unnecessary ; it is at best
a doubtful remedy.

9. Electricity may prove highly beneficial in
judicious hands, but hurtful in the hands of such
as have not properly considered the subject of
submersion.

10. Let

10. Let long and diligent application be made of the means recommended. Do not yield the case up as *irretrievably lost* sooner than after four or five hours application of the above means.

11. As the following rule is often, and *almost* always transgressed, I shall again repeat it: let the body be taken up with as little tossing and agitation as possible; let no jolting or rolling be used with a view of emptying it of water. There is no water present, or next to none; and the heart, which is the part chiefly loaded with blood, may be burst by this injudicious proceeding; perhaps more mischief has been done by tossing and rolling than by any other part of injudicious treatment made use of.

P O S T S C R I P T.

It should have been mentioned, in its place, that, though four lives have been lost, within these few months, in this neighbourhood, two of them only were found, on whom the means of recovery could be tried; yet one of these, it was said, shewed symptoms of life after he was brought on shore.

The people who flocked round, tossed, rolled, and otherwise agitated the body, with great violence,

lence, before medical aid came, though at no great distance ; and much of their failure in restoring respiration, may be attributed to it.

In the second case on which the attempt was made, agitation was likewise had recourse to.

I have dwelt the more on this, because I find the practice comes recommended by so great an authority as the HUMANE SOCIETY, vid. *Directions for the Recovery of the apparently dead, &c.* printed on a card, for the conveniency of carrying in the pocket. Doubtless this respectable body published the rule (for there is no date to it) prior to the more perfect investigation of the subject by late authors, invited to the research by their own premiums, laudably offered for this purpose. This Society, however, deserves our warmest acknowledgments for their great and unwearied exertions ; and it cannot be doubted, but posterity will revere them, as they eminently deserve.

The application of bottles of hot water to the feet, ancles and knees, I think of some importance ; and, as soon as respiration begins, these may be used as considerable auxiliaries. When the blood begins to circulate, heat may be then gradually increased : by and by, as respiration proceeds, a warm bed should be prepared, and the patient now placed in it ; but he should not be left to himself till the functions strengthen, and the heart
be

be able more completely to continue its wonted motions. Sleep will now come to his relief, and its restorative influence finish the happy cure.

STATE OF THE SUBJECT, IN THIS NEIGHBOURHOOD,
IN THE LAST TWELVE MONTHS.

FIVE suffered submerſion; the bodies of two of theſe never found.

Two ſpeedily taken up, and means of recovery uſed, but without ſucceſs.

ONE, near *Stow-market*; the means of recovery uſed, and happily with ſucceſs.

I remain,

Dear SIR,

With much reſpect for your virtues,

Your moſt obedient,

And very humble ſervant,

R. HAMILTON.

Ipswich, June 6, 1794.

B O O K S

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